

TWO CASES OF AMOEBIC ABSCESS OF LIVER

CURED BY ASPIRATION AND INJECTION OF QUININE
INTO THE CAVITY WITHOUT DRAINAGE.

BY

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INTRODUCTION BY DR. LEONARD ROGERS.

NEARLY four years ago, in a paper read before the British Medical Association,¹ I showed that living amoebae can be found in the walls of every case of tropical abscess of the liver examined at the time of or shortly after operation, as well as *post mortem*, if they have not been previously drained for some days, and at the meeting of the Association last year² I confirmed that statement after much further experience, and also illustrated the great value of the presence of leucocytosis in assisting the early diagnosis of the disease. Moreover, in the first paper I showed that two-thirds of tropical abscesses of the liver seen in Calcutta are free from staphylococci and bacteria when first opened, even in the late stage of the disease so commonly met with in native patients, while as a matter of fact in nearly half of the remaining cases but one or two colonies of cocci were obtained on culture, which were probably accidental contaminations or at least played no part in the causation of the disease, an opinion which is borne out by the fact that in Case I, recorded below, the liver abscess was cured by aspiration and quinine injection in spite of a very small number of colonies of *Staphylococcus albus* being cultivated from the aspirated pus. Moreover, I then also recorded the fact that I had found the active amoebae in the wall of a liver abscess could be killed with great rapidity and certainty by weak solutions of quinine, and that when such solutions are used for washing out liver abscess cavities, which are discharging thick pus swarming with amoebae, these parasites very rapidly disappear, and the discharge becomes much less copious and almost serous in character, as long as it remains free from septic cocci.

Having thus found that amoebic abscess of the liver is in the great majority of the cases free from organisms of a bacterial nature, while the constantly present amoeba is readily killed by weak solutions of quinine, while it is well known that this class of abscess does sometimes encyst and dry up of itself, I suggested in July, 1906, that

it would be rational procedure, in cases diagnosed early at any rate, to draw off as much pus as possible by aspiration, and to inject quinine solution into the cavity, and then to withdraw the needle and watch the result, the pus being examined bacteriologically to ascertain if it is free from staphylococci or other bacteria, and I concluded the paper with the remark that "this method is about to be tried in Calcutta, and I hope before long to be able to report on it." As far as I am aware, no cases in which this method has been given a trial have yet been published, possibly owing to my not having hitherto been able to fulfil my promise to record the results of the use of the method, on account of having had no cases under my own treatment, while I have met with unexpected difficulties in persuading surgeons to give this treatment a trial. The usual objection raised is that my method is a violation of the principle that an abscess in any position and of any kind must be opened and drained. The fact that at least two-thirds of amoebic abscesses of the liver are quite free from ordinary pus-forming bacteria, and that even in the case of tuberculous abscesses withdrawing the pus and injecting iodoform is sometimes successful, while the amoeba of liver abscess is much more rapidly killed by quinine than the tubercle bacillus by iodoform, are arguments which usually fail to modify the force of this surgical canon.

Recently, however, an opportunity of trying the method arose, and the result so far exceeded the most sanguine expectations that after a few months a second case was treated in a similar manner by the same surgeon with equally happy effects, so they appear to be worthy of record in the hope that they will lead to a further trial of what may now be considered as at least a promising advance in the treatment of one of the greatest scourges of Europeans resident in many tropical countries. Both these cases were operated on by my friend Captain R. P. Wilson, I.M.S., Resident Surgeon, Presidency General Hospital, Calcutta, whose notes are recorded below, and who has also had a considerable amount of success with the ordinary surgical treatment of the disease. I should also mention that Major F. P. Maynard, I.M.S., tried the method about three years ago in a very large abscess in a native, but on that occasion the pus was found to contain staphylococci, and the abscess had to be opened two days later and rapidly proved fatal. In another case of a large abscess in a European patient, who was considered to be too ill to stand the shock of having the abscess opened, 20 oz. of pus was aspirated and the quinine solution injected by Captain J. G. P. Murray, I.M.S., but I cultivated both *Staphylococcus aureus* and *B. pyocaneus* from the pus, so the abscess was opened two days later, but death took place the same day, cases of mixed infection being extremely fatal in my experience. These cases illustrate the importance of examining the pus bacteriologically, as such complicated cases must be opened. Where feasible, the best plan will be to stain and



examine microscopically a drop of the pus at the time of the operation—which would not take more than five minutes—and if cocci or bacteria are found, to open the abscess at once; but if the result is negative, as will usually be the case, to inject the quinine solution and withdraw the needle without opening and draining it, and in cases diagnosed early, I believe success may be expected to result in the great majority of the cases. In native patients, who usually come to hospital in a late stage of the disease, often with large abscesses bulging superficially, it would appear at first sight that they must be opened and drained, but the results of such surgical treatment are not at all satisfactory, as Captain Megaw, I.M.S.,³ recently showed that the mortality at the Medical College Hospital, Calcutta, is at least 60 per cent. As a matter of fact, I have repeatedly found that the pus of such cases was sterile when the abscess was first opened, yet, in cases dying from the exhausting discharge after they had been opened, very numerous staphylococci were found in the pus *post mortem*, owing to the extreme difficulty in keeping the copious discharge sterile in a hot damp climate in native patients. Even in large abscesses in natives, therefore, the new method appears to be worthy of trial in view of the results recorded below, even if the aspiration and injection have to be repeated.

STRENGTH OF THE QUININE SOLUTIONS.

In my former paper I mentioned that I had found both the neutral bisulphate of quinine and also the ordinary sulphate (1 gr. dissolved in 1 minim of dilute mineral acid) efficient in killing the amoeba, and I suggested the use of the latter for injection into liver abscesses with the idea that it would be less readily absorbed than the soluble salt, and this form was used in Major Maynard's case. On further consideration I have come to the conclusion that the ordinary sulphate of quinine would be liable to be precipitated and rendered inert in the alkaline serous fluid in the abscess cavity, and in the two cases recorded below the soluble bi-hydrochlorate of quinine was injected with such perfect success that I now recommend its exclusive use for this purpose. With regard to the strength and quantity to be injected, I usually have two solutions made up and sterilized before the operation, each containing 30 gr. of the bi-hydrochlorate of quinine, but in one this amount is dissolved in 2 oz. of water and in the other in 4 oz., the former being used if the abscess contains less than 10 oz. of pus, and the latter if it is larger. In this way the dose of quinine is limited to 30 gr., but in the case of larger abscesses it is dissolved in more water, so as to bring the drug into contact with all parts of the cavity. In Case II Captain Wilson injected 50 gr. of quinine, but the patient suffered from severe dizziness on coming round from the chloroform, so it appears advisable at present not to use more than 30 gr., which appears to be sufficient in practice.

An objection which might be raised to considering the quinine injection as the cause of the rapid cure of these two cases of liver abscess is the possibility that aspiration alone would have been equally successful, as is very occasionally the case in tropical abscess of the liver. Apart from the extreme unlikelihood of two successive cases being so rapidly cured by aspiration alone, I would point out that the first case was a very acute one with remittent fever, which it is very difficult to conceive of as likely to be immediately cured by a single aspiration. Nevertheless, further cases will be necessary to establish this method of treatment and to work out its exact indications, but as Captain Wilson is going on long leave and so will not be able to treat further cases for some time, it seems to me to be advisable to place these two cases on record to give him due credit for first successfully trying such a novel proceeding as the method I suggested.

CASES BY CAPTAIN R. P. WILSON, I.M.S.

CASE I. Very Acute Liver Abscess diagnosed early by Leucocytosis and X Rays, and treated by Aspiration and Injection of Quinine into the Cavity: Rapid Recovery — F. E., European, aged 19, admitted to the General Hospital, August 12th, 1905, for fever of five days' duration. His previous health had been good and his habits temperate. His illness began with a rigor lasting an hour and a half, and followed by headache and fever, the latter having continued up to the time of his admission. On August 11th he had pain in the abdomen and in the right side which prevented his sleeping at night. There had been no sickness, while he has never had dysentery or diarrhoea and he does not drink alcohol. He had taken quinine before admission, and now has severe pain in the right hypochondrium. No abnormal physical signs in any of the organs on admission; bowels irregular.

A blood slide made on admission was examined by Dr. Rogers, who reported the presence of leucocytosis without any marked increase in the proportion of the polynuclears (69.6 per cent.), and suggested liver abscess as the most likely cause of the fever. The pain in the right hypochondrium continued.

On August 17th the liver dullness was found to extend from the sixth rib to 2 in. below the costal margin in the nipple line, a marked increase since his admission, while the conjunctiva now showed slight jaundice.

On August 18th five loose stools containing a little mucus were passed, and he was unable to lie on his left side, while the epigastrium was tender.

August 19th. A blood count by Dr. Rogers now gave the following result: Red corpuscles, 4,520,000; white, 18,750; ratio of white to red, 1 to 144. Diminished resonance and a few fine crepitations were detected at the base of the right lung on this day.

August 20th. The liver dullness extends up to the level of the fifth rib, and there is tenderness of the right side of the abdomen. Examination with *x* rays showed the vault of the diaphragm on the right side on a level with the fourth rib, while it did not move at all with respiration. Liver abscess in the upper part of the right lobe was therefore diagnosed.

Operation.—On August 21st the liver was aspirated between the eighth and ninth ribs a little externally to the right nipple line, and 10 oz. of thick chocolate-coloured pus was drawn off, and 3 oz. of sterile bi-hydrochlorate of quinine of a strength of 30 gr. in 4 oz. was injected through the cannula by means of a glass syringe with a short piece of indiarubber tubing attached to it, and the cannula was then withdrawn. A dose of 30 gr. of calcium chloride was given both before and after the operation to check any tendency to oozing from the punctures.

Bacteriological Examination of the Pus.—Dr. Rogers examined some of the pus taken in a sterile test tube and reported that no living amoebae were found microscopically (as is very commonly the case in the thick pus of amoebic abscess, although this parasite is swarming in the wall of the abscess) and only two colonies of *Staphylococcus albus* were grown on culture, which were possibly contaminations. No cocci could be found by microscopical examination of the pus.

Progress of the Case.—On the evening of the operation the pain was much diminished, and he could turn over on to his left side without trouble.

August 22nd. The temperature was normal all day for the first time. (See Chart I.) Slept well last night, although he had some pain on the right side at 11 p.m. He has a dull pain this morning, but no acute pain, and he feels much better.

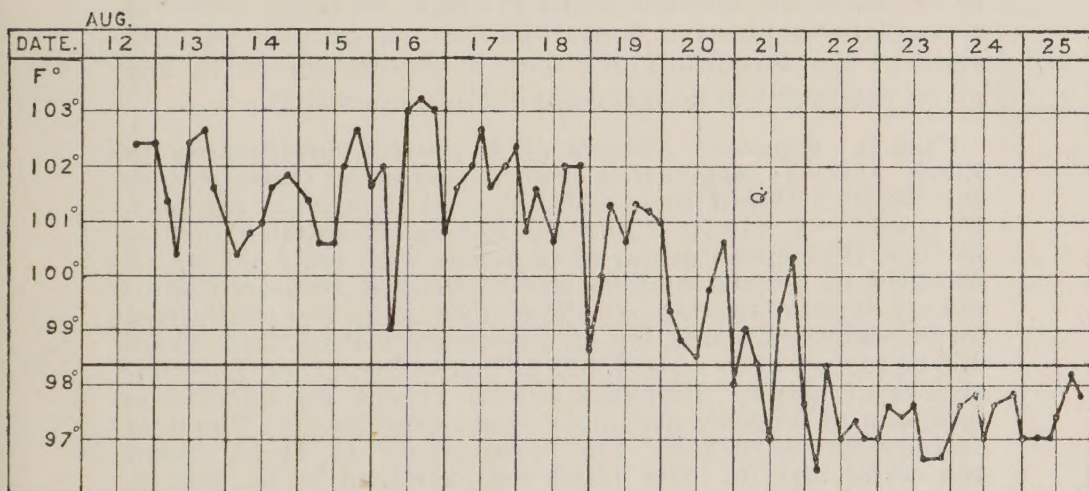


Chart I.

From this time the further progress was uneventful, the temperature never again rising above normal. On the third day after the operation he was able to sit up in bed, and was feeling hungry. On August 27th the liver dullness extended from the sixth rib to 1 in. below the costal margin, and Dr. Rogers reported that the leucocytosis had disappeared (8,500). On the 28th, one week after the operation, he was allowed to sit up on a chair, and on September 9th he was discharged from the hospital completely recovered. He has been seen recently, just seven and a half months after the operation, and is in most robust health; he cycles regularly, and he has had no trouble since he left hospital beyond an occasional slight dragging pain in the hepatic region.

This case was one of exceptional acuteness, only fifteen days having elapsed between the first onset of fever and the operation, at which half a pint of pus was withdrawn from his liver, while his temperature curve on admission was of the remittent type, and there was seen evidence of

the inflammatory process spreading towards the base of the right lung. The presence of an abscess was inferred from the leucocytosis with a comparatively low proportion of polynuclears (which Dr. Rogers has recently pointed out² is the type commonly met with in uncomplicated amoebic abscess of the liver), and from the loss of movement of the right arch of the diaphragm as seen with the x rays. As at this early stage pleural adhesions would almost certainly be absent, the abscess could not have been incised and drained without opening the pleural cavity, with consequent collapse of the lung, so I decided to aspirate, and, at Dr. Rogers's suggestion, to try his method of injecting a sterile solution of quinine into the cavity. The result was most striking in the rapidity with which the fever and pain subsided and convalescence progressed, while the patient remains in exceptionally good health seven and a half months after the operation, so there can be no doubt that the cure is a permanent one as far as the abscess operated on is concerned. The simplicity and rapidity of the operation, and the almost entire absence of shock after it, are also important points in favour of the method, while it would be much easier to repeat the aspiration and injection of quinine should signs of the formation of a second abscess appear in any given case than to do a second cutting operation.

CASE II. Repeated Attacks of Hepatitis culminating in Liver Abscess: Aspiration and Injection of Quinine into the Cavity: Rapid Cure.—M. D., aged 40, railway employé, European, was admitted into the General Hospital, Calcutta, in July, 1905, for an attack of hepatitis with low fever which subsided in a week, and he was discharged recovered after twenty days in hospital. On November 1st he was readmitted for the same complaint, but of a more acute character. There was no history of dysentery, but he had suffered from irregular attacks of watery diarrhoea (which is not an uncommon symptom of amoebic dysentery in our experience). The liver dullness extended from the fourth space to $1\frac{1}{2}$ in. below the costal margin. His blood was examined by Dr. Rogers, with the following result: Red corpuscles, 4,820,000; white, 21,000; with 78 per cent. of polynuclears, a marked leucocytosis being present. At his suggestion large doses of ipecacuanha (15 gr. twice a day) were given on November 7th and 8th, and on the 9th the temperature fell to normal and did not rise again, and on the same day the leucocytes had fallen to 17,500; the patient steadily recovered and left hospital on December 2nd to return to work. He was seen two months later by Dr. Rogers, but complained that he did not feel perfectly well, and on March 25th, 1906, he was readmitted to hospital suffering from a third attack of hepatitis. He now had dull pain in the right shoulder, dullness, and loss of breath sounds at the base of the right lung, while the liver dullness extended from the level of the fourth rib to the costal margin. He had low fever, rising to about 100° F., in the afternoon. On the 28th Dr. Rogers found 18,500 leucocytes, with only 65 per cent. of polynuclears. On April 4th an examination with x rays showed that the diaphragm on the right side reached up to the level of the fourth rib and did not move with respiration, while there was a darker area in the right portion of the liver shadow. Liver abscess in the right lobe was therefore diagnosed.

Operation.—On the morning of April 5th exploratory puncture of the liver was performed under chloroform, and at the fourth trial from 10 to 12 oz. of thick reddish pus was evacuated through the ninth space in the post-axillary line; 50 gr. of the bi-hydrochlorate of quinine, dissolved in 5 oz. of sterile water, was injected into the abscess cavity and the cannula withdrawn. A 30 gr. dose of calcium chloride was given both before and after the operation. The pus was found by Dr. Rogers to contain very numerous inactive amoebae, while cultures on agar proved sterile.

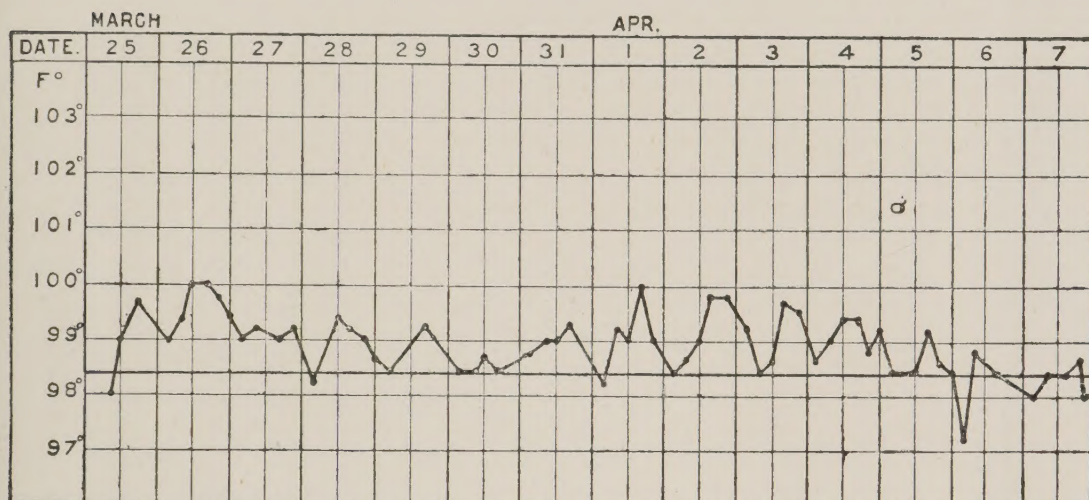


Chart II.

Progress of the Case.—On the afternoon of the injection he could turn over in bed with much less pain than before. On the following day the temperature was normal, and remained so subsequently (see Chart II). On the third day he could sit up in bed and without pain, and was placed on chicken diet, and after a week he was allowed to sit up on a couch. The leucocyte count was carefully watched, and four days after the operation the number had fallen to 9,500; but on April 24th they numbered 11,250, and on May 3rd reached 15,750, although the patient appeared to be perfectly well, and had been placed on large doses of ipecacuanha from April 26th to 30th on the supposition that there might be some latent amoebic dysentery in the upper part of the large bowel. On examining him again with the *x* rays, the right arch of the diaphragm was rather high, and moving less freely than the right, so on May 7th exploratory puncture was again performed but no pus was found. Except for occasional slight dragging pain on deep respiration, he remains quite well five weeks after the operation and is about to return to his work. The high leucocyte counts during convalescence were probably caused by absorption of the remaining pus in the abscess.

The main point of interest about this case is that it is such a very different type from the first one, being as chronic an abscess as the former was acute, yet the effect of the treatment was equally prompt and satisfactory.

REFERENCES.

¹ BRITISH MEDICAL JOURNAL, September 20th, 1902. ² BRITISH MEDICAL JOURNAL, November 11th, 1905. ³ Indian Medical Gazette, March, 1905.

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